

## PATENT COOPERATION TREATY

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From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

## FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/DE2004/001775

International filing date (day/month/year)

04.08.2004

Priority date (day/month/year)

05.08.2003

International Patent Classification (IPC) or both national classification and IPC  
H05B33/14

Applicant

TECHNISCHE UNIVERSITÄT

## 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 56.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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10/567112

IAP9 Rec'd PCT/PTO 03 FEB 2006  
International application No.  
PCT/DE2004/001775**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY****Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
- a. type of material:
- ☐ a sequence listing
- ☐ table(s) related to the sequence listing
- b. format of material:
- ☐ in written format
- ☐ in computer readable form
- c. time of filing/furnishing:
- ☐ contained in the international application as filed.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**International application No.  
PCT/DE2004/001775

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-4, 6, 10
	No: Claims	5, 7, 8, 9
Inventive step (IS)	Yes: Claims	1-4, 6, 10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

**2. Citations and explanations****see separate sheet**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/DE2004/001775

**Item V.**

- 1). Die folgenden Dokumente werden zitiert:

D1 : EP 0 532 798 A (ASAHI CHEMICAL IND) 24 March 1993 (1993-03-24)

D2 : EP 0 857 007 A (TDK CORP) 5 August 1998 (1998-08-05)

- 2). Beansprucht ist zum einen die Verwendung einer Schicht aus hydrophoben, linear oder zweidimensional polycyclischen Aromaten (3 bis 12 Ringelemente) als Sperrschicht bzw. zur Verkapselung von mit organischen Schichten aufgebauten elektrischen Bauelementen. Zum anderen enthält die Anmeldung Ansprüche, die eine Vorrichtung zum Gegenstand haben und zwar eine Organische Leuchtdiode, wobei sich im kennzeichnenden Teil die Massgabe findet, dass die löcherinjizierende und transportierende Zone die bereits vorstehend erwähnten Aromaten enthält und als Verkapselungsschicht ausgebildet ist.

Was die Verwendungsansprüche anbetrifft, werden Neuheit und erfinderische Tätigkeit anerkannt. Es wurde kein Stand der Technik gefunden, der die Verwendung derartiger Aromaten in Hüll- oder Schutzschichten offenbart. Üblicherweise werden zu diesem Zweck eher Polymere eingesetzt, wie beispielsweise Teflon; siehe EP 0857007, die Figur 1 und die Seite 17, Mitte.

Was die auf die Leuchtdiode als solche gerichteten Ansprüche betrifft, scheint das Neuheitskriterium nicht erfüllt zu sein (Art.33(2) PCT). Die besagten Aromaten werden allgemein in löcherinjizierenden Schichten eingesetzt; hingewiesen sei auf die Dokumente D1 und D2. Der Aufbau einer Leuchtdiode, wie er hier vorgeschlagen wird entspricht daher dem, was bereits aus dem Stand der Technik bekannt ist. Es mag wohl sein, dass dabei die für die Löcherbildung zuständige Schicht

*'... sowohl eine elektrische Funktion erfüllt, als auch als Sperrschicht ...'* wirkt; siehe Seite 6 der Beschreibung. Eine derartige zusätzliche Funktion kann gegeben sein, ist jedoch nicht geeignet, um den Anspruchsgegenstand von dem bekannten Aufbau einer Leuchtdiode zu unterscheiden.